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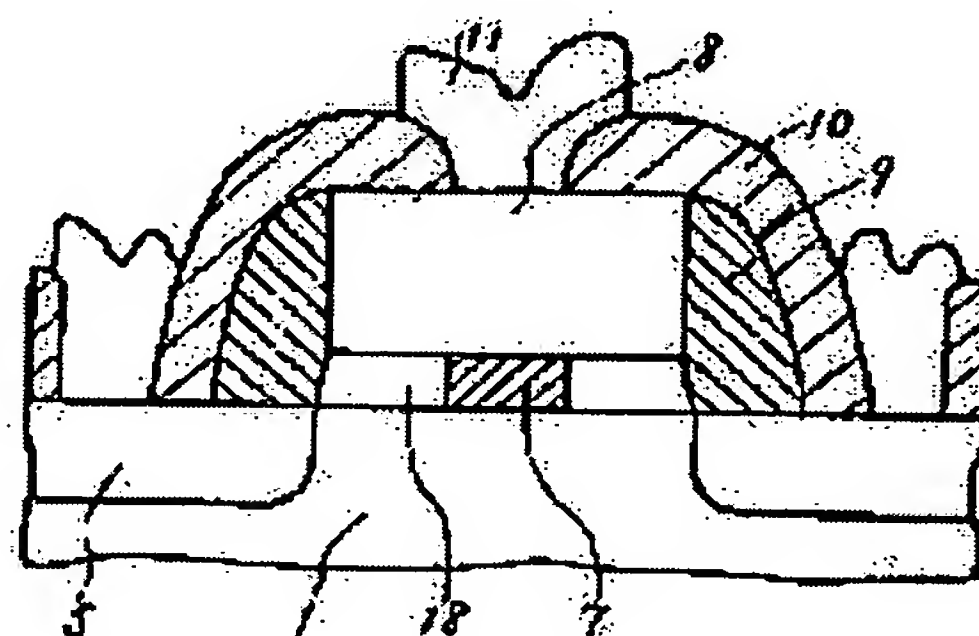
(54) SEMICONDUCTOR DEVICE AND ITS MANUFACTURE

(57)Abstract:

PURPOSE: To obtain a semiconductor device in which the reliability of a MOS semiconductor element is enhanced by a method wherein an electric field at the edge part of a gate electrode for the element is modulated and the degradation of a gate insulating film is reduced.

CONSTITUTION: A gate silicon oxide film 7 and a polysilicon gate electrode 8 are formed on a silicon substrate 1. A desired gate length is obtained by a photolithography. Then, the gate silicon oxide film 7 is made slender by a wet etching operation or the like. Then, a high permittivity film 18 is deposited, and it is buried under the polysilicon gate electrode 8 in parts in which the gate silicon oxide film 7 has been made slender. A gate insulating film which is composed of the high permittivity film 18, the silicon oxide film 17 and the high permittivity film 18 is formed in the transverse direction (a direction from a source toward a drain).

Consequently, when the gate electrode is formed to be a virtually downward U-shaped structure, an element which is resistant to a short channel effect can be formed, and the number of processes is hardly increased.



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